The manuscript by Oliveira et al. presents important, high-quality new data that contribute meaningfully to our understanding of the Holocene and aspects of ongoing climate change. The authors clearly articulate the existing knowledge gaps and the motivation for the study, define the research aims effectively, and provide a thoughtful and well-structured discussion of the results. A few minor suggestions, along with some revisions to the definition of a forest event and the shading used in Figures 2,3, and 4, would help improve clarity for the reader. Additionally, while the abstract and main text mention the relevance of this work for understanding aspects of ongoing and projected climate change, the conclusions do not reflect this broader significance or explain how the findings improve our understanding of ongoing climate change.

108: I recommend including detailed information on the age–depth model in the Methods section, as it differs from previously published work.

109: Additional detail is needed regarding the addition of this control point, including how was it determined and what it represent.s In Figure S1, it would be helpful to clearly show the control points from Clemens et al., 2021 and which one is from this study, and to explain this explicitly in the figure caption.

127-135: References required here

137-40: This sentence is difficult to follow and would benefit from rephrasing.

151: Change levels to samples

151: I recommend removing the temporal resolution from this sentence and adding it to the information about the age model when it is moved to the methods section.

206: Change to: The site U1446 pollen record

208: Change to: dominance of semi-arid steppe taxa

208: I would recommend using 'indicates' rather than 'suggests'- here and throughout the manuscript

210: Change to: Fig. 2.

208, 210, 212, 224: I suggest briefly outlining the dominant taxa in your record that support the characterization of "semi-arid steppe," "open vegetation," "wet evergreen forest," and "tropical deciduous forest and grasses." This will help readers understand the basis for these ecological classifications.

225: For those unfamiliar with this proxy and this study, briefly explain the biomarker measured (n-alkanes? Fatty acids?) and how and where it represents hydrological changes.

240: The current explanation of a forest event is quite confusing, as is the highlighting of these events in Figure 2. It gives the impression that a "forest event" refers to either a contraction or an expansion of forest, but in the figure the definition seems inconsistent: some forest events highlight mostly the contraction, while others highlight mostly the expansion. I recommend providing a clearer definition of a forest event and standardizing how these events are represented in the figure to avoid confusion. Furthermore, I find the use of the term forest event confusing, as I would interpret this term as a forest expansion- here it looks like it is describing periods of forest contraction which I don't think will be intuitive for the reader.

320: This is very interesting!

487: In the Introduction, you highlight the relevance of this work for understanding aspects of ongoing and projected climate change. It would be helpful to reiterate this point in the conclusion to more clearly emphasise the broader relevance and contemporary significance of the study.

516: change to: than during the preindustrial period

Figure 2:

• The arrows are ambiguous and it is not clear which features they are pointing to

• Reconsider the term “forest event” or define it clearly

• The use of the brown highlights and dashed lines in this figure is confusing, as they do not appear to align consistently with the inferred forest contractions and expansions. For example, the dashed line marking FE-1 coincides with a decline in forest cover and an expansion of Poaceae, whereas the caption suggests this interval represents a forest expansion. In addition, the brown highlighted interval should be extended to encompass the full period of forest decline, which appears to continue until ~403 ka. I would clearly highlight the three forest phases in their entirety with one coloured band, and use another coloured band to highlight the open vegetation intervals.

• Finally, representing forest expansion solely with a dashed line is potentially misleading, as the expansion phases extend over longer intervals. These phases would be clearer if shown as shaded bands, analogous to the contraction intervals, to better capture the full duration of both forest expansion and contraction events.

• It would be helpful to include an arrow on the dDprecip graph to show which direction infers wetter/drier

Figure 3: This is a matter of personal preference, but the use of solid colour shading would be clearer and more effective for highlighting forest expansion and contraction phases. It would also be helpful for the reader if the style of shading was consistent in figures 2, 3 and 4. The current lines extend beyond the top of the plot and should be adjusted accordingly.